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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,675	12/17/2001	Isao Ota	111483	5111

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EXAMINER	
UMEZ ERONINI, LYNETTE T	
ART UNIT	**PAPER NUMBER**
1765	

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/015,675	OTA ET AL.	
	Examiner	Art Unit	
	Lynette T. Umez-Eronini	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,10,12,13 and 16-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,10,12,13 and 16-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 July 2003* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tastu et al. (US 4,769,073) in view of Ashley et al. (EP 444470 A1).

Tastu teaches an admixture that contains a cerium oxide and lanthanide salt and that has a pH of greater than 6 but not less than 10 (column 7, line 19 - column 8, line 7). The aforementioned reads on and encompasses,

A sol having a pH of 3 to 6 or 8 to 10, **in claim 1**.

Tastu also teaches an admixture with a solution of a cerium salt, an aqueous solution of a salt of at least one trivalent rare earth, which includes lanthanum,

praseodymium, and neodymium (column 4, lines 14-29) and lists a composition comprising: ceric oxide, lanthanum oxide, and neodymium oxide and having a mean particle diameter of 1.5 +/- 1 μm, in EXAMPLE 1 (column 12, lines 13-37). Tatsu discloses ceric oxide in the form of the composition described in French Pat. No. 2,549,846 and such compositions comprise a crystallographic phase of CeO_2 type . . . and corresponding to the formula $Ln_{2-x}Ce_xSi_2O_7$in which . . . x is greater than or equal to 0 and less than 2" (column 5, lines 7-15). The aforementioned further reads on,

A sol in which particles are dispersed in a medium, wherein the particles comprise as a main component crystalline cerium oxide of the cubic system and as an additional component a lanthanum compound, neodymium compound or a combination thereof and encompasses wherein the additional component is contained in X/(Ce + X) molar ratio of 0.005 to 15 in which X is lanthanum atoms, neodymium atoms or a combination thereof, **in claim 1**;

wherein the additional component is a lanthanum compound, **in claim 2**; and

wherein the additional component is a neodymium compound, **in claim 3**;

Tastu differs in failing to teach a particle size of 2 to 200 m^2/g, **in claim 1**.

Ashley discloses a stable ceria composition of one or more of La, Nd or Y and the stabilized ceria retains a surface area of greater than 20 m^2/g (Abstract), which encompasses a particle size of 2 to 200m^2/g.

Since Ashley illustrates the specific combination of particles having a surface area of 2 to 200 m^2/g is known, then it would have been obvious to one having ordinary skill in the art at the time the invention was made to select any range of surface area as

taught by Ashley, including applicants' specifically claimed range of surface area for the purpose of forming a high surface area ceria composition by incorporating one or more of La or Nd to the composition (Ashley, Abstract).

4. Claims 10 and 12, 13, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tastu (US '073) in view of Ashley (US '470 A1) and further in view of Aozasa (US 6, 171,572 B1)

Tastu teaches an admixture that contains a cerium oxide and lanthanide salt and that has a pH of greater than 6 but not less than 10 (column 7, line 19 - column 8, line 7). The aforementioned reads on and encompasses,

an abrasive containing a sol having a pH of 3 to 6 or 8 to 10, **in claim 10**.

Tastu also teaches an admixture with a solution of a cerium salt, an aqueous solution of a salt of at least one trivalent rare earth, which includes lanthanum, praseodymium, and neodymium (column 4, lines 14-29) and lists a composition comprising: ceric oxide, lanthanum oxide, and neodymium oxide and having a mean particle diameter of 1.5 +/- 1 μm, in EXAMPLE 1 (column 12, lines 13-37). Tatsu discloses ceric oxide in the form of the composition described in French Pat. No. 2,549,846 and such compositions comprise a crystallographic phase of CeO_2 type . . . and corresponding to the formula $Ln_{2-x}Ce_xSi_2O_7$ in which . . . x is greater than or equal to 0 and less than 2" (column 5, lines 7-15). The aforementioned reads on,

an abrasive containing sol in which particles are dispersed in an aqueous medium, wherein the particles comprise as a main component crystalline cerium oxide

of the cubic system and as an additional component a lanthanum compound, neodymium compound or a combination thereof and encompasses wherein the additional component is contained in X/(Ce + X) molar ratio of 0.005 to 0.15 in which X is lanthanum atoms, neodymium atoms or a combination thereof, **in claim 10**;

wherein the additional component is a lanthanum compound, **in claim 12**; and wherein the additional component is a neodymium compound, **in claim 13**.

As pertaining to claims 16-18, since Tatsu uses the same composition as claimed by applicants, then using Tatsu's composition in the same manner as in the claimed invention would respectively result in,

an abrasive, which is used for polishing a substrate, which comprises silica as a main component,

an abrasive, which is used for polishing a rock crystal, a quartz glass for photomask, a semiconductor device or a hard disk made of glass; and

an abrasive, which is used in a step of polishing an organic film, a step of polishing Inter Layer Dielectric (ILD) or a step of shallow trench isolation, for polishing a semiconductor device.

Tastu differs in failing to teach a sol in which particles are dispersed in an aqueous medium in a range of 0.1 to 50-wt % and a particle size of 2 to 200 m^2/g, **in claim 10**.

Ashley discloses a stable ceria composition of one or more of La, Nd or Y to the ceria in an amount of from 5 to 25 mole % of the ceria and the stabilized ceria retains a

surface area of greater than 20 m^2/g (Abstract), which encompasses particles having a range of 0.1 to 50-wt % and particle size of 2 to 200m^2/g.

Since Ashley illustrates the specific combination of particles having a surface area of 2 to 200 m^2/g is known, then it would have been obvious to one having ordinary skill in the art at the time the invention was made to select any range of wt % and surface area as taught by Ashley, including applicants' specifically claimed range of wt % and surface area for the purpose of forming a high surface area ceria composition by incorporating one or more of La or Nd to the composition (Ashley, Abstract).

Tastu in view of Ashley differs in failing to teach a sol wherein the particles have a particle size of 50 to 150 nm, **in claim 10**.

Aozasa teaches, ". . . a cerium sol having an average colloidal particle size of 3 to 100 nm, and optionally one or more members selected from the group consisting of salts of yttrium, scandium, lanthanum, praseodymium, neodymium, samarium, europium, gadolinium, magnesium, calcium, barium, aluminum, titanium, and hafnium . . . " (column 3, lines 49) and " . . . a cerium sol having an average colloidal particle size of 3 to 100 nm, preferably 5 to 80 nm, more preferably 10 to 50 nm. . . . If the average colloidal particle size is smaller than 3 nm, production in industrial scale will be difficult" column 5, lines 52-59). Aozasa also teaches, cerium sol having a concentration of about 100 to 200 g/liter (~ 10 to 20 g/100 ml or 10-20 wt %), (column 6, lines 4-6).

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify the combination or abrasive materials as taught by

Tastu in view of Ashley, by using Aozasa's sol having a particle size of 3 to 100 nm which falls within the particle size range as claimed by applicants for the purpose of ease of production on an industrial scale (Aozasa, column 8, lines 42-45).

Response to Arguments

5. Applicants' arguments with respect to claims 1-3, 10, 12, 13, and 16-18 have been considered but are moot in view of the new ground(s) of rejection because the formerly applied prior art fail to address, a sol having a --pH of 3 to 6 or 8 to 10-- and --have a specific surface area of 2 to 100 m^2/g--, . . ." as recited in (Currently Amended) Claims 1 and 10.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 571-272-1470. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ltue

January 4, 2006

NADINE G. NORTON
SUPERVISORY PATENT EXAMINER